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(56) Documents Cited

GB 2241133 A EP 0730387 A2 WO 94/30023 A1

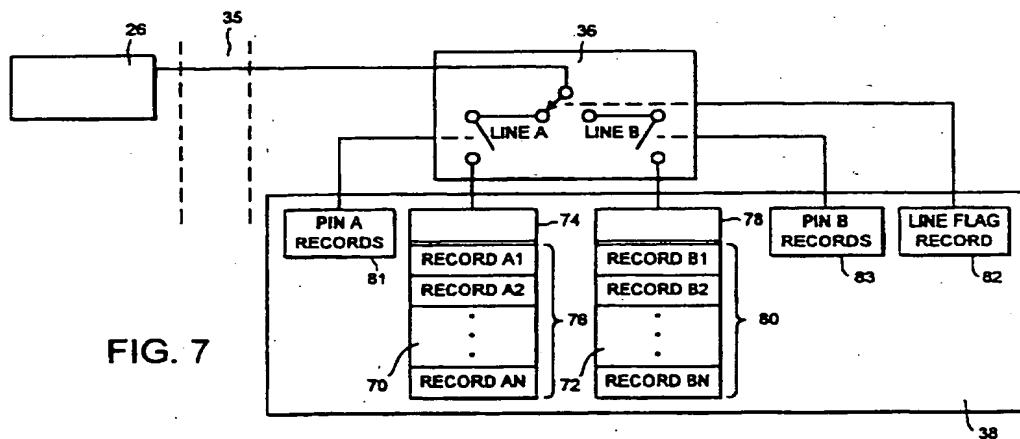
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LECTX LECX
INT CL⁶ G06K 19/07, H04B 1/38, H04M 1/274, H04Q
7/22 7/32 7/38
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(54) Abstract Title

Removable data store for an user interface device

(57) A removable data store such as a SIM card for an user interface device such as a mobile phone has a microprocessor 36 and a memory 38. The microprocessor responds to a memory access message from the user interface device in dependence upon an operational mode of the device which may be determined by an user entered PIN code. A first PIN enables a user to access a fixed dialling number (FDN) list in the data store. A second PIN also allows the user to update these numbers. Two separate FDN lists 70,72 may be stored on the data store. A line flag record corresponding to a particular telephone line mode determines which list is accessed in response to a memory access message. Abbreviated dialling number (ADN) lists may be accessed in the same way. Separate lists of national and international dialling numbers, or separate lists of available services in a particular network may also be accessed in dual mode mobile phones capable of use in national and international networks.



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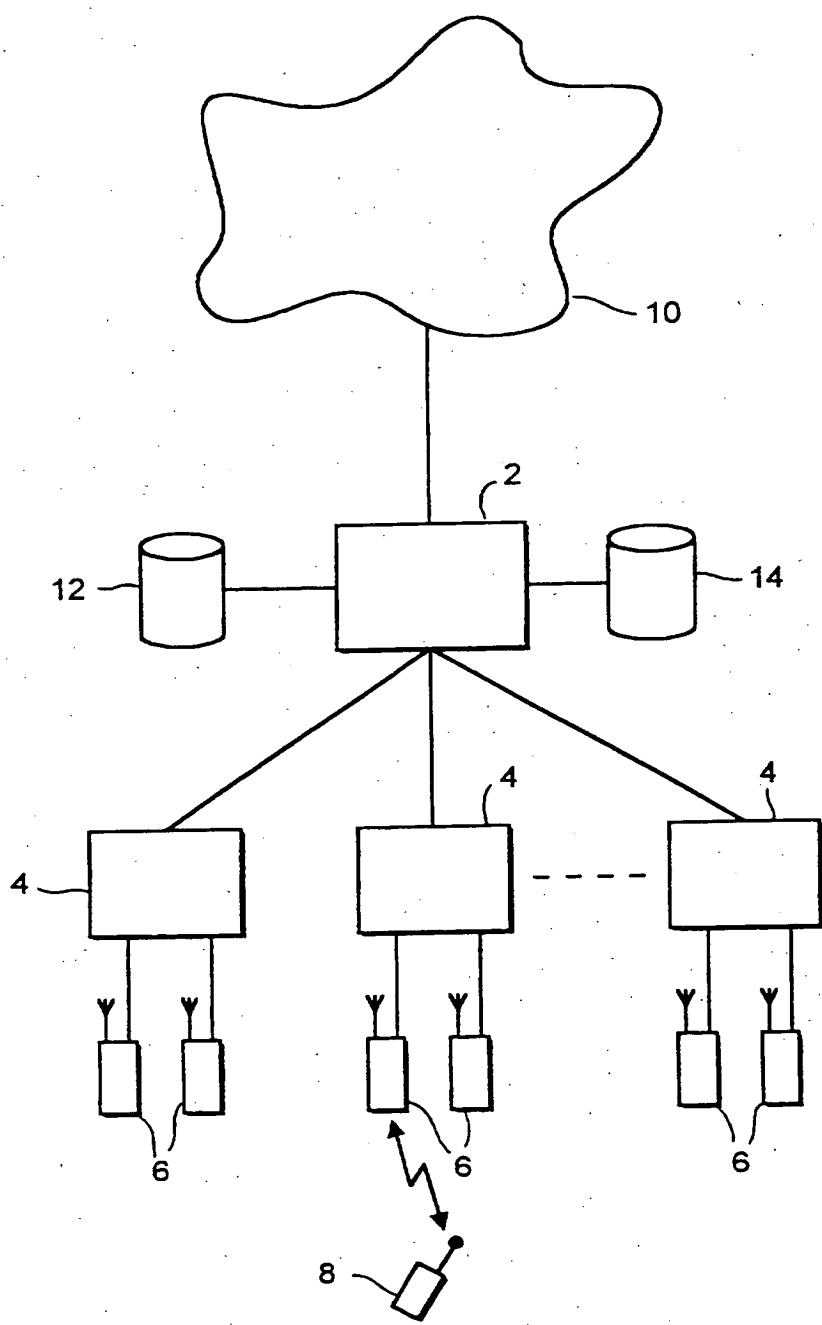


FIG. 1

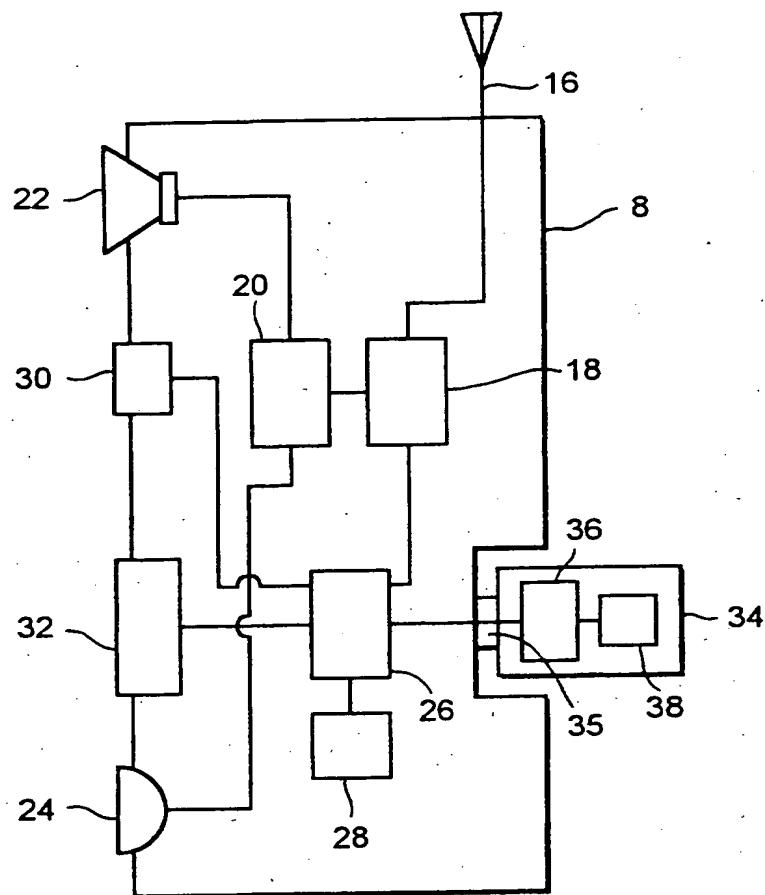


FIG. 2

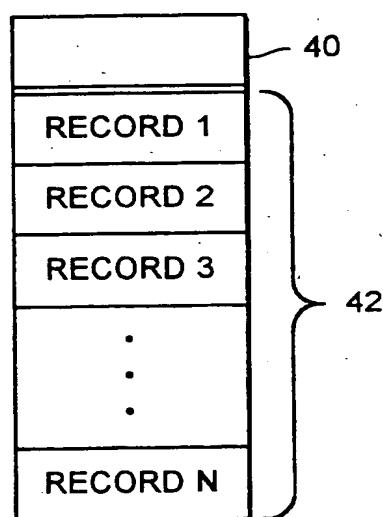


FIG. 3

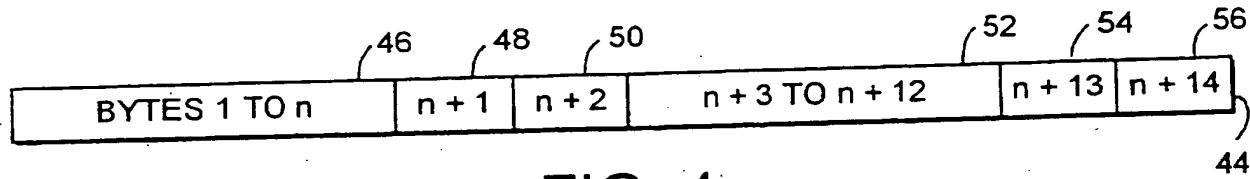


FIG. 4

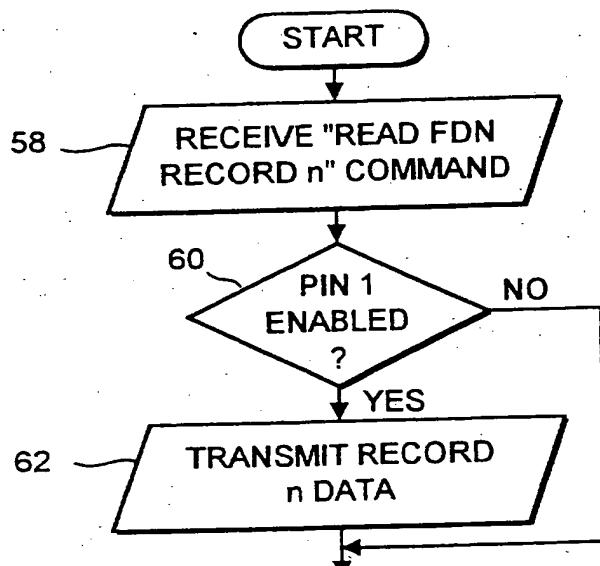


FIG. 5

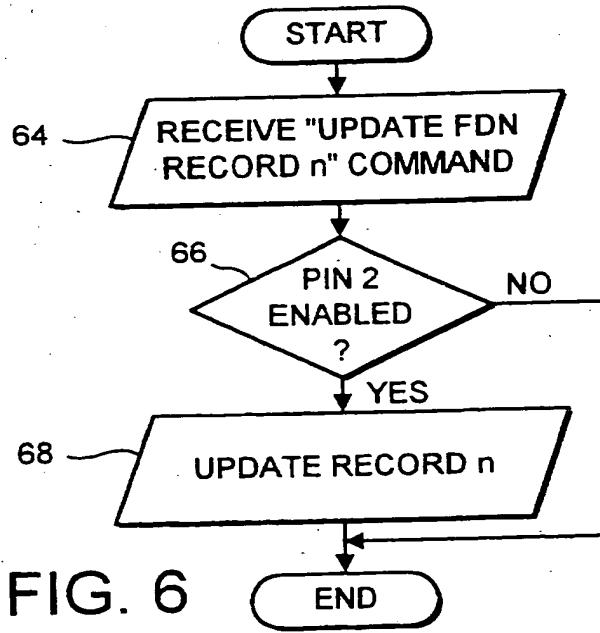


FIG. 6

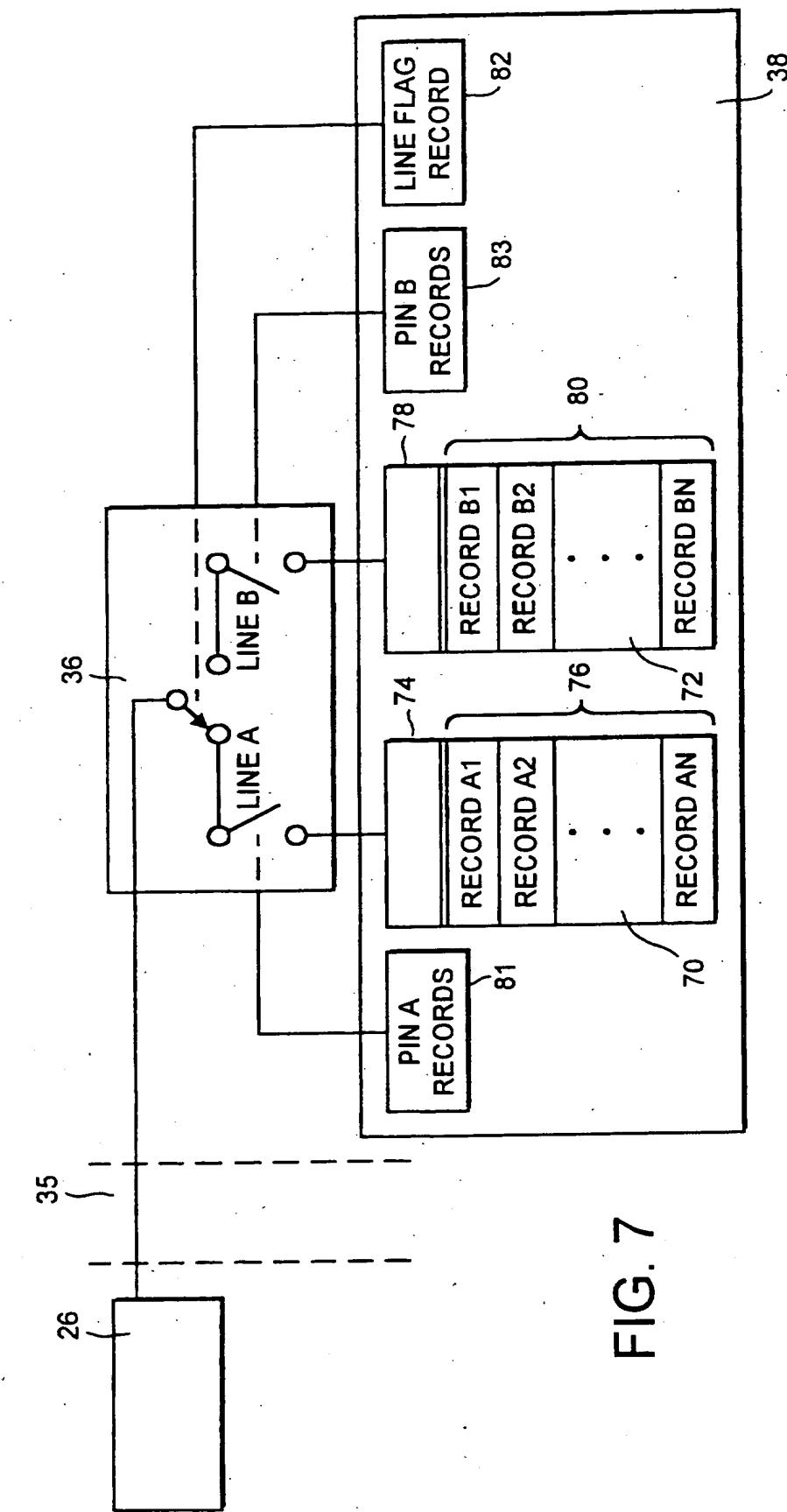


FIG. 7

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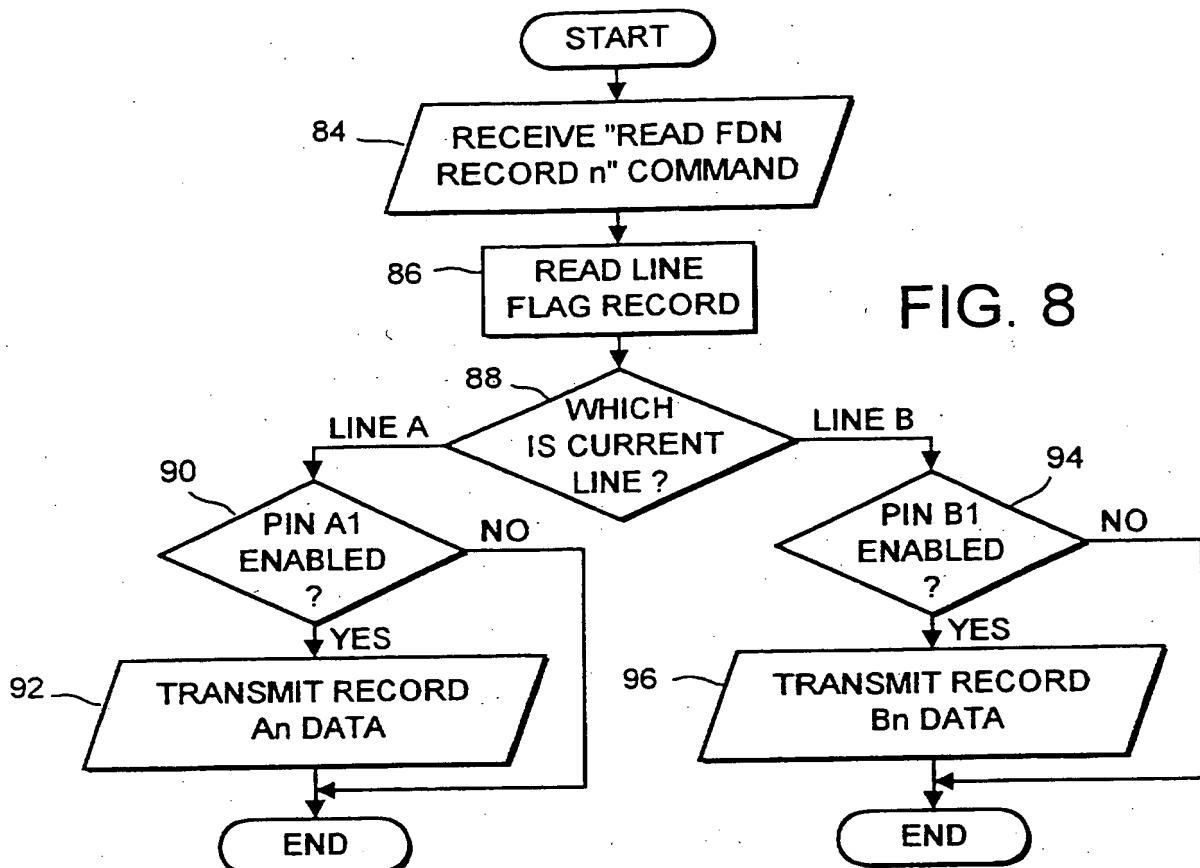
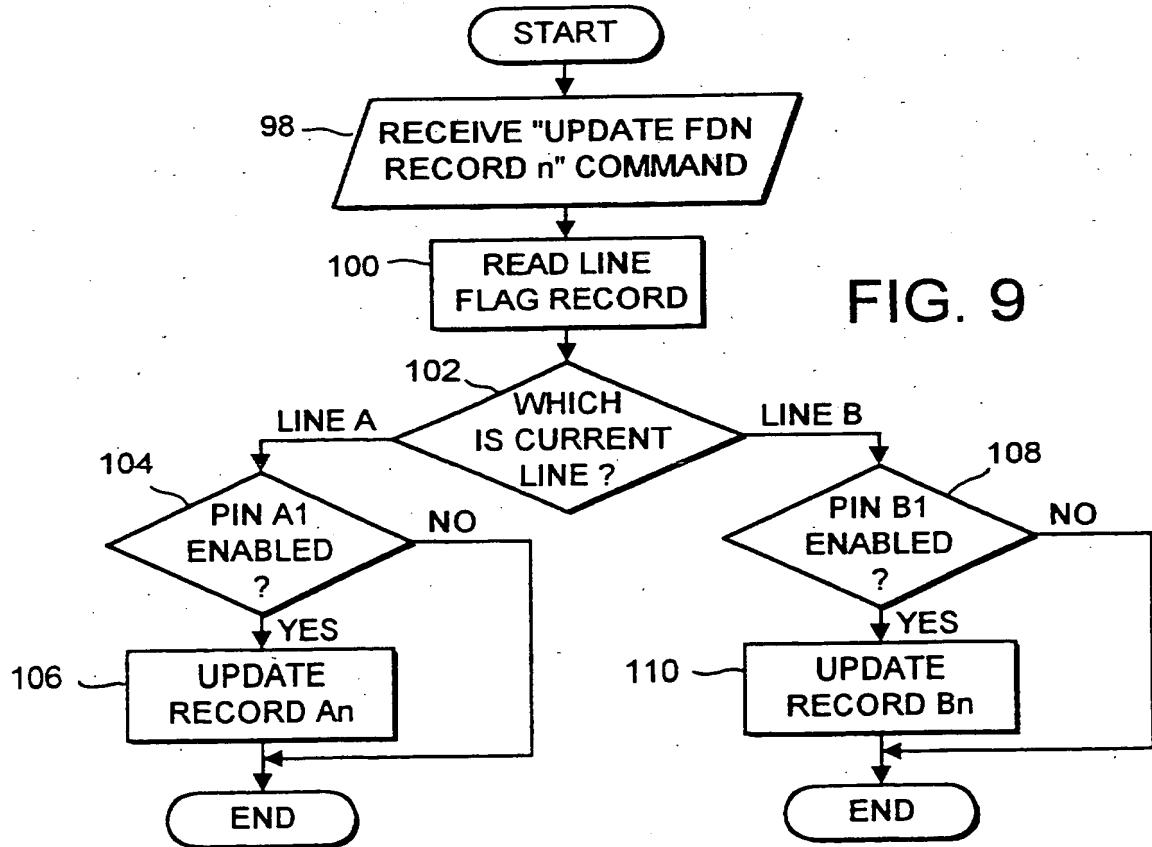


FIG. 8



DATA STORE

This invention relates to a removable data store for a user interface device, such as a mobile station used in a mobile communications system. One such data store is a subscriber identity module (SIM) as used in a GSM (Global System for Mobile communications) digital cellular radio system.

In a known conventional GSM system, each mobile station, such as a mobile telephone handset, is provided with a SIM, also referred to as a smart card, which is inserted into the mobile station in order to allow the mobile station to receive service in a GSM network.

The SIM includes a microprocessor, memory elements including a permanent memory (e.g. ROM), a non-volatile re-writable memory (e.g. EEPROM) and a volatile re-writable memory (e.g. RAM), and contacts for forming the data transfer interface between the SIM and the mobile station.

A set of SIM-based data records are defined in the GSM standard. These include permanent data records, such as that holding the international mobile subscriber identity (IMSI) whereby a mobile subscriber is recognised by a mobile communications network. Other data records are modifiable, either at the

initiative of the mobile station, such as the data record holding the current location area information (LAI) for the mobile station, or at the initiative of the mobile subscriber, such as a set of fixed dialling number (FDN) records which are used to allow the subscriber to bar calling of, or restrict calling to, the dialling numbers stored in the set of FDN records.

The GSM standard also specifies a command set for use by a mobile station to access data record in the SIM and retrieve and write data items from and to the file. Each standard data record has a standard data record address which is specified in an access command for that data record sent by the mobile station. The SIM uses the data record address in order to determine which data record is to be accessed. Thus, there is a linear relationship between a data record access command sent by the mobile station and the data record accessed by the SIM.

Thus, in theory any standard GSM mobile station is compatible with any standard GSM SIM which is connectable to the mobile station. Any basic GSM feature implemented on the mobile station which involves the storage and/or retrieval of the contents of a standard data record in the SIM is obtainable. Furthermore, by use of a standard such as the GSM standard, manufacturers are able to lower the

cost of the technology involved, by pooling the cost of research and development. Production costs can also be minimised by a manufacturer by the use of basic designs which can be modified for the supply of equipment to different GSM network operators. Individual features for specific GSM operators can thus be provided on the equipment, whilst the basic GSM features are provided as a matter of course.

A subset of GSM mobile stations and SIMs are used in PCN (Personal Communication Network) Networks. PCN mobile stations and SIMs comply with the GSM/DCS 1800 standard. An added dual-line mode feature allows the mobile station to operate in two different line modes. A different dialling number (MSISDN) is associated with each mode, and stored in the SIM. The mobile station still retains only a single IMSI with which both MSISDNs are associated. The particular MSISDN for which a voice call is made is signalled on the network/mobile station radio interface by means of a bearer service code. For outgoing calls the signalled bearer service code is logged by the network in order to make an appropriate record of the call, e.g. for billing purposes, against the appropriate MSISDN. For incoming calls, the mobile station notes the signalled bearer service code and retrieves the corresponding MSISDN from the SIM and displays the MSISDN, or an

associated line identifier, to the user when indicating the receipt of an incoming call.

European patent publication number EP-A-0526981 describes a cellular radio telephone which has two or more directory numbers stored in a memory. In one mode of operation, all of the directory numbers are enabled for incoming calls. In another mode of operation, one of the directory numbers is disabled such that the telephone will not respond to an incoming call intended for that number. Other modes may be provided where other of the directory numbers are disabled. When an incoming call is received, a microprocessor of the telephone compares the telephone number for which the incoming call is intended with each of its stored numbers. Providing the stored number is enabled, the telephone call is signalled to the user and the call may be answered in the conventional way. The directory numbers are stored in the memory in a conventional way, that is to say the directory numbers are stored as a set of records, each one of which may be independently addressed by the microprocessor.

International patent publication number WO 92/19078 describes a GSM-type mobile telephone system in which a smart card is allocated two IMSIs which are selectively activated by the user. Two SIM

circuits are located at different ends of the smart card and are selectively activated by inserting the smart card into the mobile station in one of two ways. Each of the SIM circuits is provided with a different 5 IMSI. Once the smart card is inserted into the mobile station, the mobile station accesses a data record, such as the IMSI data record, in a conventional fashion, and the data presented to the mobile station can be altered by removal and reinsertion of the smart 10 card in an inverted disposition. A similar effect could be achieved simply by providing two separate SIMs having different subscriber identities. The SIM is in effect two SIM circuits combined on a single 15 smart card.

According to one aspect of the present invention 20 there is provided a removable data store for a user interface device, said data store comprising a memory for storing data, which memory is accessible by access procedures controlled by memory access messages sent by said user interface device, said data store further comprising a processor circuit having a first response 25 to a memory access message, and a second response, different to said first response, to said memory access message, wherein said processor circuit independently selects between said first response and said second response on the basis of a current 25

operational condition of said user interface device.

In the conventional arrangements, when a feature is to be added to the user interface device, such as a user station for a mobile communications system, which involves the storage and/or retrieval of data from the removable data store, such as a SIM, both the user station and the SIM must be modified. A new type of data record must be defined on the SIM having a new data record address by which the user station can address the data record. The user station itself must be provided with a new data record access procedure, involving the use of the new data record address on the SIM, for accessing the new data record.

One advantage of the present invention is that it provides an alternative method of providing a new feature, in which different responses are given to a memory access message sent by a user station. Implementation of the new feature does not necessarily require modification of the user station itself. The new feature can be implemented on the SIM, or equivalent data store, and activated in response to determination by the SIM as to which mode of operational condition of the user station, or other user interface device, is current.

Furthermore, when a feature involving access to a new data record on the SIM is added according to the

conventional method by the modification of the SIM and the user station, a loss of inter-compatibility of the SIM with other user stations is inevitable. The added feature cannot be obtained when the modified SIM is inserted into a different user station, which otherwise complies with the same standard. Thus, use of the added feature is restricted to a combination of user station having the added feature capability and a SIM also having the added feature capability.

Another advantage of the present invention is that inter-compatibility of a data store with any standard user interface device can be retained. The added feature can be implemented solely on the data store, and invisibly to the user interface device, by arranging that the removable data store can independently determine whether the user interface device is in one operational condition or another.

In the past, only one data record has been accessible on a removable data store, such as a SIM, in response to a data record access message sent by a user interface device, whichever operational condition the user interface device is in. In the present invention, the data store is able to respond by the retrieval of data from alternative memory portions, depending on the operational condition of the user interface device. Data records specific to one

operational condition can be stored and/or retrieved selectively in accordance with the operational condition of the user interface device.

In one type of known SIM, a data record is allocated for the storage of data relating to the mode of operation of a mobile station. Namely, a line flag record is already provided in some PCN SIMs, in particular those of the present applicant, to provide a PCN mobile station with a non-volatile record of the previously operative line after the mobile station has been switched off. When a line mode is chosen by the user, the mobile station writes the appropriate data into the line flag record, located at a predetermined memory address, using a SIM record update procedure. Then, when the mobile station is switched off and subsequently switched on, the mobile station performs a line flag record read procedure to determine which line mode to enter when the mobile station is initialising its various modes of operation. Thus, the line flag record has in the past been read only to determine a previous line mode of the mobile station, in order to set the line mode. The current line mode is not read.

In accordance with the present invention, the line flag record indicating the current line mode of the mobile station can be read by the SIM, or

equivalent data records can be used by other removable data stores, in order to determine which response it should provide to a memory access command sent by the mobile station, or other user interface device.

5 The memory access command may be a write command in which case a memory portion to which data is written is selected by the data store in accordance with the current operational condition of the user interface device. Thus, data specific to one 10 operational condition can be updated when in that mode of operation, without data specific to other modes of operation being altered.

15 According to a further aspect of the invention, there is provided a smart card comprising a plurality of memory portions which are selectively accessible by an access message sent by a read/write device, access selection between said memory portions being performed by said smart card in accordance with variable data stored on said smart card. Accordingly, selection 20 between memory portions can be performed on the smart card without the need for a specific instruction from the read/write device to which it is connected.

25 Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a block diagram of a mobile

communications network;

Figure 2 is a block diagram of a mobile station;

Figure 3 illustrates the structure of an FDN list

file;

5 Figure 4 illustrates the structure of an FDN data record;

Figure 5 is a flow diagram of steps taken by a conventional SIM when reading an FDN record;

10 Figure 6 is a flow diagram showing steps taken by a conventional SIM when updating an FDN data record;

Figure 7 is a block diagram illustrating a principle of the present invention;

15 Figure 8 is a flow diagram showing steps taken by a SIM according to the present invention when reading an FDN record; and

Figure 9 is flow diagram showing steps taken by a SIM according to the present invention when updating an FDN record.

A known PCN network, referred to as a public land mobile network (PLMN), is schematically illustrated in 20 Figure 1. This is in itself known and will not be described in detail. A mobile switching centre (MSC) 2 is connected via communication links to a number of base station controller (BSCs) 4. The BSCs 4 are dispersed geographically across areas served by the 25 mobile switching centre 2. Each BSC controls one or

more base transceiver stations (BTSs) 6 located remote from, and connected by further communication links to, the BSC. Each BTS 6 transmits radio signals to, and receives radio signals from, mobile stations 8 which are in an area served by that BTS. That area is referred to as a "cell". A PCN network is provided with a large number of such cells, which are ideally contiguous to provide continuous coverage over the whole network territory.

A mobile switching centre 2 is also connected via communications links to other mobile switching centres in the remainder of the mobile communications network 10, and to other networks such as a public service telephone network (PSTN), which is not illustrated. The mobile switching centre 2 is provided with a home location register (HLR) 12 which is a database storing subscriber authentication data including the international mobile subscriber identity (IMSI) which is unique to each mobile station 8. The IMSI is also stored in the mobile station in a subscriber identity module (SIM) along with other subscriber-specific information.

The mobile switching centre is also provided with a visitor location register (VLR) 14 which is a database temporarily storing subscriber authentication data for mobile stations active in its area.

Referring to Figure 2, a PCN mobile station 8 comprises a transmit/receive aerial 16, a radio frequency transceiver 18, a speech coder/decoder 20 connected to a loudspeaker 22 and a microphone 24, a processor circuit 26 and its associated memory 28, an LCD display 30 and a manual input port (keypad) 32. The mobile station is connected to a removable PCN SIM 34 via electrical contacts 35.

The SIM 34 connected to the mobile station has a SIM processor 36, for example a Hitachi H8 microprocessor, and SIM memory 38, which includes for example 16 kilobytes of mask-programmed ROM containing the SIM operating system, 8 kilobytes of read/write EEPROM for the non-volatile storage of data items and 256 bytes of scratchpad RAM for use by the SIM processor during operations.

At present, two physical formats of SIM are specified by the GSM and ISO standards. The first is referred to as an ID-1 SIM, which is a smart card complying with the ISO 7816 standard and being of similar dimensions to that of a conventional credit card. The second is referred to as a plug-in SIM, which is a smart card of the same thickness as the ID-1 SIM, but only measuring 25 millimetres in length and 15 millimetres in width.

Both the mobile station 8 and the different types

of SIM 34 are well known and therefore need not be described in detail herein. A commercially-available SIM is the GemXplore (registered trade mark) SIM card produced by Gemplus, BP 100-13881, Gemenos Cedex-
5 France.

As described above, the SIM 34 is used for the storage and retrieval of data items by the processor 26 of the mobile station 8. The command set, data file structure and data coding format for data communicated via the interface between the mobile station processor 26 and the SIM processor 36 are all specified, in GSM technical specification 11.11, which
10 is incorporated herein by reference.

A standard GSM file structure for the storage of data on a SIM, referred to as a linear fixed file structure, is illustrated in Fig. 3. It consists of a header 40 and record space 42. The record space is divided into N fixed length records.
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One example of data record provided in the SIM memory 38 in a conventional SIM 34 is a fixed dialling number (FDN) record 44, which forms part of an FDN list file having a linear fixed file structure. Each FDN record 44 has data stored in a fixed length coding format. The record 44 is divided into fixed-length
20 data blocks, each consisting of one or more bytes. A first data block 46, consisting of n bytes, is
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reserved for directory number identifier data. A second block 48, consisting of one byte, is reserved for data indicating the length of the directory number. A third block 50, consisting of one byte, is reserved for data indicating the type of dialling number stored in the record. A fourth block 52, consisting of 8 bytes of memory, is reserved for the directory number data itself. A fifth block 54, consisting of one byte, is reserved for a "capability configuration pointer", indicating the bearer services (e.g. voice call, fax, etc.) which can be supported by the telephone equipment corresponding to the directory number stored. A final data block 56, consisting of one byte, is an extension record pointer, which indicates the address of an extension record to be accessed in a different data file to give the remainder of an excessively lengthy number.

The FDN list has associated access conditions, namely in order for an FDN record to be read by the mobile station 8, a first user verification (herein referred to as PIN 1) needs to have been entered in order to enable the specified access to the FDN records. In addition, in order to update the FDN list, a second user verification (herein referred to as PIN 2) must have been entered by the mobile station 25 user via keypad 32 in order to enable the FDN record

to be updated. The use of two different user verifications allows an FDN list to be read at one level of access without allowing the FDN list to be updated at that level. This provides the security required for the FDN function, which restricts a user of the mobile telephone having knowledge only of the first user verification to make calls only to a defined set of directory numbers, or prevents calls to the defined set.

Referring now to Figure 5, when the mobile station 8 wishes to read the nth FDN record in the FDN list file, it sends a "read FDN record n" command to the SIM 34, which is received by the SIM processor 36 as shown in step 58.

In step 60, the SIM verifies that PIN 1 is enabled. If not, the SIM processor 36 provides no data in response to the read FDN record command. If PIN 1 is enabled, the mobile station reads the nth FDN record and transmits the FDN data to the mobile station in step 62.

Referring now to Figure 6, when any request is received from the mobile station 8 to update the nth FDN record, as shown at step 64, the mobile station first checks whether PIN 2 is enabled, step 66. If not, the specified FDN record is not updated, step 68, and remains unchanged. If PIN 2 is enabled, the

specified FDN record is updated with the new data items sent by the mobile station processor 26 accompanying the update FDN record command.

The principle of this embodiment is illustrated 5 in Figure 7. The drawing is a schematic diagram showing the data flow path for FDN data communicated between the mobile station processor 26 and the SIM processor 36, across the interface 35. Two FDN data files 70 and 72, each of a format similar to that of a conventional FDN list file, are provided. A first 10 FDN list file 70 is associated with a first voice call line, line A, of the mobile station 8. A second FDN file 72 is associated with a second voice call line, line B. FDN list file 70 contains a header portion 74 and a record portion 76 containing N records A1 to AN. 15 The second FDN list file 72 also contains a header portion 78 and a record portion 80, containing N records B1 to BN.

The SIM memory also contains a line flag record 20 82, which contains data indicating a current line mode of the mobile station 8, and first and second PIN files 81 and 83 containing independent user verification data for each line mode.

In this embodiment of the present invention, the 25 line flag record 82 is utilised by the SIM processor 36 in order to determine which of the FDN list files

70 or 72 to select when an FDN record access command is sent by the mobile station processor 26. The FDN record access command sent by the mobile station processor 26 is of a conventional GSM standard type, containing the unique GSM-specified FDN file address.

5 However, in the present invention there are two FDN list files 70 and 72 each having a different file address when addressed by the SIM processor 36. Each of the two addresses used by the SIM processor 36 when addressing the FDN lists files 70 and 72 corresponds with the one file address sent by the mobile station processor 26 in the file access command across mobile stations/SIM interface 35. This file access command is received by the SIM processor 36, which decides

10 which of the FDN list files 70 or 72 to address on the basis contents of the line flag record 82. Thus, the FDN list file selection is performed independently of the mobile station 8 and no modification of the FDN record access command sent by the mobile station is

15 required in order to implement the presentation of alternative FDN list files associated with alternative line modes of the mobile station 8.

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Referring to Figure 8, when the SIM receives a command to read one of its FDN records, at step 84, it first reads the line flag record 82 in step 86. From that, it determines which line mode is currently

operative in the mobile station 8, in step 88. If line A is operative, the mobile station verifies that a first user verification (PIN A1) associated with line A and stored in PIN A record file 81 has been entered correctly (i.e. enabled) by the mobile station user in response to a user verification prompt, in step 90.

If PIN A1 has not be enabled, no response will be sent to the mobile station 8. If however PIN A1 has been enabled, the SIM microprocessor 36 accesses FDN list file 70 and transmits the FDN record of the specified number, in this case FDN record An, to the mobile station processor 26 in step 92. If on the other hand line B is found to be current on step 88, the SIM microprocessor 36 determines whether a different user verification PIN B1 stored in PIN 3 record file 83, has been enabled by an appropriate input by the mobile station user, in step 94. If not, no data is transmitted to the mobile station processor 26. If PIN B1 has been enabled, the SIM operating system selects FDN list file 72 and transmits the contents of the record, in this case FDN record Bn, corresponding to the FDN record specified in the FDN record access command, in step 96.

Referring now to Figure 9, only one of the list files 70 and 72 may be updated in response to an FDN

record update command sent by mobile station processor
26, in dependence on the current line mode. When a
user enters updated FDN data into mobile station 8,
the mobile station processor 26 generates an
5 appropriate update FDN record command. This relates
to FDN record n seen by the mobile station processor
26.

When the SIM processor 36 receives the "update
FDN record n" command in step 98, it first reads the
10 line flag record 82, in step 100, to determine which
is the current operative line in the mobile station 8.

If the mobile station processor 36 determines in
step 102 that line A is current, it checks in step 104
whether a further user verification, PIN A2, stored in
15 PIN A record file 81, has been enabled by the mobile
station user. PIN A2 is different from PIN A1, to
ensure that users of the telephone in line A mode
cannot necessarily update the FDN list file 70. Thus,
if PIN A2 is not enabled, the FDN list file 70 is not
20 updated. If, however, PIN A2 has been enabled in step
104, the appropriate FDN record, in this case FDN
record An, corresponding to the FDN record specified
by the mobile station processor 36, is updated with
the new FDN record data.

25 If in step 102 the mobile station processor 36
determines that the mobile station is operating

currently in line B mode, it verifies in step 108 whether a further user verification associated with line B, PIN B2, stored in PIN B record file 83 also different to PIN 1 for the reasons specified in relation to PIN A2, has been enabled. If PIN B2 has not been enabled, no update is performed. If PIN B2 has been enabled, the appropriate FDN record, in this case FDN record Bn corresponding to the FDN record specified in the update FDN record command, is updated with the new FDN record data.

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OTHER EMBODIMENTS

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The present invention is not limited to the particular types of data record stored on the SIM described above. Although in the above embodiment, the contents of the FDN list are altered in accordance with the current telephony mode, other types of data record could equally be altered in a similar fashion. For example, each standard GSM SIM is provided with a single abbreviated dialling number (ADN) list, which allows the mobile station user to store and quickly access frequently used telephone numbers on the SIM. Different such abbreviated dialling number lists could be presented in different line modes of the mobile station. These lists of records also need not be of the same length - the number of records in alternative lists could be different, in accordance with the

record storage requirements of each respective mode of telephony of the mobile station.

Furthermore, the invention is not limited to different line modes. Other benefits may be obtained
5 from the presentation of different alternative data depending on the current operational condition. For example, the operational condition may be a PIN mode, that is to say that one mode may be that in which a user has successfully enabled a PIN stored in the SIM, and a second mode of operation may be that in which the PIN has not been enabled. Thus, different data records, addressed by the same data record access command sent by the mobile station, could be presented by the SIM. This could be applied to the ADN list.
10 In the PIN mode in which the relevant PIN has not been enabled, a non-secret ADN list could be presented. In the second PIN mode, a secret ADN list could be presented instead of, or in addition to, the non-secret ADN list. The selection of data records to be accessed could be implemented by the SIM processor 36
15 in a fashion similar to that described above.
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It is also envisaged that the present invention could be applied in respect of a dual-mode mobile station which is operable both in an international mobile communications network and a national communications system. The ADN list stored in the SIM
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could be provided in two parts, namely one part containing the national directory numbers and a second part containing the international dialling codes of the stored dialling numbers. Furthermore, a mode flag record, similar to line mode record 82, could be provided in the SIM for the purposes of indicating whether the mobile station is currently in international network mode or national network mode.

If in national network mode, the mobile station processor 36 would read only the national directory number data in response to an ADN record read request. However, in international network mode, the SIM processor 36 would access both the national directory number record and the international dialling code record corresponding to the ADN record read command received from the mobile station processor 26, and transmit the entire international directory number for use by the mobile station.

It is furthermore envisaged that the present invention is employable in relation to a customer service profile stored (CSP) in the SIM to identify the services available to the user. Not all networks support the entire range of services. Accordingly, in another embodiment of the present invention, when a mobile station requests a CSP from the SIM, the SIM would be adapted to read the mobile network code (MNC)

in the location information record stored in the SIM. The SIM would also hold records of different available MNCs indicating which services are or are not available in the corresponding network. The response 5 of the SIM to a CSP request would be modified accordingly. For example, if the user were to roam onto a network which does not support a short message service (SMS) function, the data provided by the SIM in response to a CSP request would suppress the SMS 10 menu in the mobile station, although it would otherwise be available to the user in a different network.

The present invention is not restricted to selecting between two responses in accordance with an 15 operational condition which is only one of two specified alternative operational conditions. Three or more such responses could be provided for a mobile station having three or more alternative specified operational conditions.

It is furthermore envisaged that the present 20 invention could be implemented to provide a first response to a memory access message when a SIM is connected to one mobile station operating with a first operational condition, and a second response to the 25 same memory access message received when connected to a different type of mobile station, having different

5 operational conditions. The mobile station may for example send an identity code to the SIM when it is switched on, in order to signal its operating conditions to the SIM. The SIM would in turn store data relating to those operational conditions in a dedicated record, which could be accessed by the SIM in order to determine how to respond to a given memory access message.

10 It should be noted that the term "data record" as used herein need not be a record which can be separately addressed by the SIM processor 36. The present invention can be implemented by providing a "data record" in any form which contains of data which is separately identifiable by the SIM processor 36, and therefore separately processible by it.

The present invention is also not restricted to a removable data store for a mobile station. The invention could also be implemented in relation to any type of smart card, for example a smart card used in an electronic banking system.

Further variations and modifications to all or any of the above embodiments are envisaged which fall within the scope of the present invention.

CLAIMS:

1. A removable data store for a user interface device, said data store comprising a memory for storing data, which memory is accessible by access procedures controlled by memory access messages sent by said user interface device, said data store further comprising a processor circuit having a first response to a memory access message, and a second response, different to said first response, to said memory access message, wherein said processor circuit independently selects between said first response and said second response on the basis of a current operational condition of said user interface device.
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selected in accordance with the current operational condition.

4. A data store according to any preceding
5 claim, wherein, when said message is a data storage command, said first response comprises writing data to a memory portion in said data store.

5. A data store according to claim 4, wherein,
when said message is a data storage command, said
10 second response comprises writing data to a different
memory portion in said data store.

6. A data store according to any preceding
claim, wherein said data store determines said
operational condition by reading data from a third
15 memory portion in said data store.

7. A data store according to any preceding
claim, wherein said first response is exclusive to one
operational condition and said second response is
exclusive to another operational condition.

20 8. A data store according to any preceding
claim, wherein an operational condition is enabled by
the input of a user verification code to the user

interface device.

9. A data store according to claim 8, wherein
a first operational condition is enabled by a first
such user verification code, and a second operational
5 condition is enabled by a second such user
verification code.

10. A data store according to any of claims 1 to
9, wherein said user interface device is a user
station used in a mobile communications system.

10 11. A data store according to claim 10, wherein
said operational condition of said user station is a
mode of telephony.

15 12. A data store according to claim 11, wherein
said data store is compatible with a user station
which is operable in two different telephone line
modes, said selection depending on which of said modes
is operative.

20 13. A data store according to any preceding
claim, wherein said responses comprise the
transmission or storage of data relating to a
directory number.

14. A data store according to claim 13, wherein
said data is used by said user station in order to
determine an allowable directory number.

5 15. A smart card comprising a plurality of
memory portions which are selectively accessible by an
access message sent by a read/write device, access
selection between said memory portions being performed
by said smart card in accordance with variable data
stored on said smart card.

10 16. A user station for use in a mobile
communications system and comprising a data store, or
smart card, according to any of claims 1 to 15.

15 17. A method of selecting between first and
second responses to a memory access message sent to a
removable data store by a user interface device,
wherein a current operational condition of said user
interface device determines, independently of the
contents of said memory access message, a selection
between said first response and said second response.

20 18. A method according to claim 17, wherein,
when said message is a data request, different data is
transmitted in said first and/or second responses

respectively.

19. A method according to claim 17 or 18,
wherein, when said message is a data request, at least
one of said first and second responses comprises
5 reading data from a memory portion in said data store
and transmitting corresponding data to said user
interface device, said memory portion being selected
in accordance with the current operational condition.

10 20. A method according to claim 17, 18 or 19,
wherein, when said message is a data storage command,
said first response comprises writing data to a memory
portion in said data store.

15 21. A method according to claim 20, wherein,
when said message is a data storage command, said
second response comprises writing data to a different
memory portion in said data store.

20 22. A method according to any of claims 17 to
21, wherein said data store determines said
operational condition by reading data from a memory
portion record in said data store, in order to perform
said selection.

23. A method according to claim 22, wherein the data contents of said third memory portion are altered in response to a message from said user interface device indicating a change of operational condition.

5 24. A method according to any of claims 17 to 23, wherein said operational condition is a mode of telephony.

10 25. A method according to claim 24, wherein said modes are telephone line modes, said selection depending on which of said modes is operative.

26. A method according to any of claims 17 to 25, wherein at least one of said responses comprises transmitting or storing data relating to a directory number.

15 27. A method according to claim 26, wherein said stored or transmitted data indicates an allowable directory number to be used by said user station.

20 28. A method of operating a user station in a mobile radio communications network, communications occurring via a radio interface between said user station and network elements, said user station

comprising a data store having a memory for storing a plurality of data items and a processor circuit for selecting between said data items, the method comprising setting a mode of operation of said radio interface, said processor circuit independently performing a selection between said data items in accordance with the set mode of operation.

5 29. A data store according to any of claims 1 to 14, or a method according to any of claims 17 to 27, 10 wherein said memory access message contains a single memory address.

10 30. A data store according to any of claims 1 to 14 or 29, or a method according to any of claims 17 to 27 or 29, wherein said memory access message does not 15 identify a portion of said memory in which said operational condition is indicated.

20 31. A removable data store for a user interface device, substantially as hereinbefore described, in particular with reference to the accompanying drawings.

32. A method of selecting between response to a data access command, substantially as hereinbefore

described, in particular with reference to the accompanying drawings.



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Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

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Int Cl (Ed.6): G06K 19/07, H04B 1/38, H04M 1/274, H04Q 7/22, 7/32, 7/38

Other: Online Database: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB2241133 A (MOTOROLA) p.6 - p.13	1 & 17 at least
X	EP0730387 A2 (IBM) p.2 - p.5	1 & 17 at least
X	WO94/30023 A1 (CELLTRACE) p.6 lines 5-17, p.9 lines 1-5	1 & 17 at least

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P Document published on or after the declared priority date but before the filing date of this invention.
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